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BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

Application Number: 10/766,672
Filing Date: January 28, 2004
Appellant(s): CHEVILLARD ET AL.

Tenley R. Krueger
For Appellant

EXAMINER'S ANSWER

This is in response to the appeal brief filed October 5, 2009 appealing from the Office action mailed March 3, 2009.

(1) Real Party in Interest

A statement identifying by name the real party in interest is contained in the brief.

(2) Related Appeals and Interferences

The examiner is not aware of any related appeals, interferences, or judicial proceedings which will directly affect or be directly affected by or have a bearing on the Board's decision in the pending appeal.

(3) Status of Claims

The statement of the status of claims contained in the brief is correct.

(4) Status of Amendments After Final

The appellant's statement of the status of amendments after final rejection contained in the brief is correct.

(5) Summary of Claimed Subject Matter

The summary of claimed subject matter contained in the brief is correct.

(6) Grounds of Rejection to be Reviewed on Appeal

The appellant's statement of the grounds of rejection to be reviewed on appeal is correct.

(7) Claims Appendix

The copy of the appealed claims contained in the Appendix to the brief is correct.

(8) Evidence Relied Upon

4,188,432	HOLDEN et al.	02-1980
5,541,285	AGARWAL	07-1996
6,713,141	KAULBACH et al.	03-2004

(9) Grounds of Rejection

The following ground(s) of rejection are applicable to the appealed claims:

Claims 2, 4, 5 and 26-34 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. Regarding claim 31, the claim recites the melt flow index of the second polymer is determined by ASTM D1238 condition G. The examiner submits that this limitation is not supported by the original disclosure. Applicant points to the background section of the invention which incorporates by reference the Sosa et al. patent (a patent directed to a reaction and devolatilization process for preparing monovinyl aromatic polymers, such as polystyrene) into the disclosure as providing support for this limitation (paragraph [0003] in the instant application published as US 2005/0161858). However, the examiner submits that there is no indication in the instant disclosure, either implicitly or explicitly, that the melt flow index measurement set forth in Sosa et al. (Table III, footnote c) is the standard by which the melt flow index is to be measured in the instant application for the second polymer. Additionally, claim 27 recites the instability kappa is as low as 0.045. There does not appear to be support for such an instability kappa limitation in the original disclosure. As shown in Figure 2B and recited in Table

1, the lowest disclosed instability kappa value is 0.142. Claims 2, 4, 5, 26, 28-30, 32, 33 and 34 are rejected as dependent claims.

Claims 2, 4, and 26-34 are rejected under 35 U.S.C. 103(a) as being unpatentable over Holden et al. (US 4,188,432).

Regarding claims 31 and 34, Holden et al. teach a method of producing shaped articles by extrusion or injection molding processes comprising providing a composition that ranges from 60-93 parts by weight of component A (col. 6, lines 7-12) wherein component A is high impact polystyrene (i.e. HIPS) or a mixture of high impact polystyrene with less than about 55% thermoplastic styrene homopolymer (i.e. GPS) (col. 5, lines 36-40; col. 6, lines 46-50). The GPS resin (i.e. the second polymer) has a melt flow index, as determined by ASTM D-1238 condition G, ranging from 5-25 g/10 min (col. 6, line 60 - col. 7, line 10; col. 10, line 44; Table 1). The HIPS and the GPS/second polymer are melt blended with other components (e.g. Component B and Component C) (col. 6, lines 12-19) and processed to form a polystyrene article. (col. 9, lines 58-64; col. 13, lines 23-28; col. 14, lines 26-30).

While Holden et al. teach the GPS/second polymer has a melt flow index range that overlaps with the claimed melt flow index range and further teaches a weight percentage range of HIPS that overlaps with the claimed weight percentage of HIPS, Holden et al. do not explicitly teach or exemplify an embodiment wherein both conditions are met at the same time. However, Holden et al. do teach that the articles made from the compositions within the specified ranges produce satisfactory physical properties (col. 5, lines 46-55) and further suggest that the specific melt flow properties (i.e. melt flow index) of the resin can be selected by the ordinarily skilled artisan in view of the intended application and processing method to be employed (col. 8, line 59-col. 9, line 2).

Therefore it would have been *prima facie* obvious to one having ordinary skill in the art at the time of the claimed invention, in view of the individual teachings of Holden et al., to have employed a GPS resin within the melt flow index range of suitability set forth by Holden et al. (e.g. values up to 20 or 25 g/10 min) while utilizing greater than 50 weight percent HIPS, as also individually set forth by Holden et al., since Holden et al. suggest compositions within the specified ranges produce satisfactory physical properties (col. 5, lines 46-55) and since Holden et al. further suggest that the specific melt flow properties of the resins to be employed can be selected by the ordinarily skilled artisan in view of the intended application and processing method to be employed (col. 8, line 59-col. 9, line 2). As such, the examiner submits that Holden et al. establish the melt flow index of the resins to be employed as a result effective variable that would have been readily optimized.

As to claim 2, Holden et al. teach the HIPS has a melt flow index ranging from 1.5 – 10 g/10 min (col. 7, lines 5-10; col. 10, line 44; Table 1).

As to claims 4 and 27, the examiner recognizes that Holden et al. do not expressly recite that the product produced has improved melt stability relative to a product made from HIPS without the second polymer as set forth in the claims. However, Holden et al. render claim 31 obvious as set forth above. As such, Holden et al. render the claimed effects and physical properties realized by the practice of the method of claim 31 obvious. Said differently, Holden et al. suggest utilizing the same claimed materials while practicing the same claimed method in the same claimed manner. Accordingly, it follows that the same claimed effects and physical properties (e.g. melt instability) would be implicitly present in the article produced by Holden et al.

As to claim 26, the examiner recognizes that Holden et al. do not expressly recite the claimed melt strength of the article. However, Holden et al. suggest utilizing the same claimed

materials while practicing the same claimed method in the same claimed manner. Accordingly, it follows that the same claimed effects and physical properties (e.g. melt strength) would be implicitly present in the article produced by Holden et al.

As to claim 28, Holden et al. disclose Izod impact values within the claimed range (Table 3). Further, Holden et al. suggest utilizing the same claimed materials while practicing the same claimed method in the same claimed manner. Accordingly, it follows that the same claimed effects and physical properties (e.g. izod impact) would be implicitly present in the article produced by Holden et al.

As to claim 29, Holden et al. disclose an article having flexural strength within the claimed range (Table 3). Further, Holden et al. suggest utilizing the same claimed materials while practicing the same claimed method in the same claimed manner. Accordingly, it follows that the same claimed effects and physical properties (e.g. flexural strength) would be implicitly present in the article produced by Holden et al.

As to claim 30, Holden et al. do not expressly recite the produced article has a molecular weight as claimed. However, Holden et al. suggest utilizing the same claimed materials while practicing the same claimed method in the same claimed manner. Accordingly, it follows that the same claimed effects and physical properties (e.g. final molecular weight) would be implicitly present in the article produced by Holden et al. Additionally, Holden et al. suggest the inverse relationship between melt flow index and molecular weight and suggest optimizing the melt flow index of the polymer, as required, to achieve the desired final article (col. 8, line 59-col. 9, line 2). As such, the examiner submits one having ordinary skill would have readily optimized the molecular weight of the article by optimizing the melt flow index of the polymers to be processed, as suggested by Holden et al.

As to claim 32, the "consists essentially of" language in the claims is noted. The transitional phrase "consists essentially of" limits the scope of the claim to the specified materials or steps "and those that do not materially affect the basic and novel characteristics" of the claimed invention*. In re Herz, 537 F.2d 549, 551-52, 190 USPQ 461, 463 (CCPA 1976).* For search and examination purposed, absent a clear indication in the specification of what the basic and novel characteristics actually are, "consists essentially of" will be construed as equivalent to "comprising." When an applicant contends that additional steps or materials in the prior art are excluded by the recitation "consists essentially of," applicant has the burden of showing that the introduction of additional steps or components would materially change the characteristics of applicant's invention*. In re De Lajarte, 337 F.2d 870, 143 USPQ 256 (CCPA 1964). See also Ex parte Hoffman, 12 USPQ2d 1061, 1063-64 (Bd. Pat. App. & Inter. 1989).* Because no evidence has been set forth on the record to show that the use of Component B and Component C as set forth by Holden et al. would materially affect the basic and novel characteristics of the instantly claimed invention, their use is considered to fall within the scope of the instant claim.

As to claim 33, Holden et al. teach the GPS/second polymer can be employed at levels ranging from 0 to about 55 weight percent (col. 6, lines 7-12 and 46-50).

Claim 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over Holden et al. (US 4,188,432), as applied to claims 2, 4, and 26-34 above, and further in view of Agarwal (US 5,541,285) and Kaulbach et al. (US 6,713,141).

As to claim 5, Holden et al. teach and suggest the method of claim 31 as set forth above. Holden et al. do not expressly teach the claimed extrusion shear rate. However, Kaulbach et al. disclose that it is known in the extrusion art that the extrusion speed/shear rate and degradation

of the polymer are directly proportional properties. As the extrusion speed/shear rate increases, the degradation of the polymer increases (col. 1, lines 50-67). Additionally, Agarwal generally discloses that extruder speeds corresponding to shear rates up to about 10,000/s are known (col. 3, lines 45-47).

Therefore it would have been *prima facie* obvious to one having ordinary skill in the art at the time of the claimed invention to have modified the method of Holden et al. and to have extruded the material at a shear rate within the claimed range of about 1,000 to about 15,000/s since Agarwal teach shear rates within the claimed range, up to about 10,000/s, are known and Kaulbach et al. suggest optimizing the speed/shear rate to control degradation. Implicitly, in view of the combination, one having ordinary skill would have optimized the speed/shear rate of the extruder in Holden et al. in order to maximize productivity while producing a product with an acceptable degree of polymer degradation.

(10) Response to Argument

Appellant's argument essentially alleges that the examiner has erred in making rejections under 35 USC 112, first paragraph and 35 USC 103(a). The examiner disagrees with the arguments and submits that the rejections made under 35 USC 112, first paragraph and 35 USC 103(a) are proper.

I. Appellant argues that the examiner has erred in rejecting claims 2, 4-5, and 26-34 under 35 USC 112, first paragraph.

Appellant argues that the original disclosure incorporates U.S. 5,540,813 into the original disclosure by reference at page 1, line 22 of the specification and that since 5,540,813, in Table III, clearly indicates the melt flow rate/melt flow index/(MFI) (note: melt flow rate, melt flow index, and MFI can be used interchangeably) is measured by ASTM 1238 condition g, the rejection of

claim 31 due to the limitation “as measured by ASTM D1238 condition g” under 35 USC 112 first paragraph is in error. This argument is not persuasive.

The examiner does not dispute that ASTM D1238 condition g is a known test for measuring the MFI of a polymer. However, importantly, the examiner notes that there are dozens of methods in the art employed for measuring the MFI of polymers. For example, there are both ASTM and ISO methods. Further, within the ASTM D1238 standard there are conditions A-X, inclusive, which employ different temperatures and loads to measure MFI in units of g/10 minutes. For example, ASTM D1238 condition G uses a temperature of 200 °C and a load of 5 kg while condition F uses a temperature of 190 °C and a load of 21.6 kg while condition I uses a temperature of 230 °C and a load of 2.16 kg. The different test conditions will clearly provide different test results. The examiner submits that there is nothing in the original disclosure, explicit or implicit, to suggest that the melt flow rate measurement for the “second polymer” having a MFI of 20 g/10 min to 40 g/10 min is to be measured by ASTM D1238 condition g. The examiner further submits that the citation in an incorporated reference from the background section of the instant disclosure does not make it clear that such a test method, while certainly existing, was intended to be the test method employed to measure the MFI of the "second polymer" set forth in the instant claims.

As an initial matter, the examiner notes that the "second polymer" as recited in claim 31 is not limited to a polystyrene based resin and that the MFI method, found as a footnote in Table III of US 5,540,813, is directed to polystyrene resins. Further, the examiner notes that there is no evidence on the record to suggest that ASTM D1238 condition g is intended to be understood as the method utilized to measure the MFI of the "second polymer” whether or not it is limited in the claims to a polystyrene resin. As set forth above, the examiner notes that a variety of other MFI testing methods and conditions are known and employed in the art and that

depending on the method employed a wide variety of results are achieved for a given polymer. It is critical in the polymer art of measuring MFI generally, and certainly in the instant disclosure which attributes criticality to the MFI of the "second polymer", that the test conditions are clearly delineated. The examiner submits that such a disclosure has not been made and that there is insufficient support in the original disclosure for claiming a “second polymer exhibiting a melt flow index (MFI) of from about 20 g/10 min to about 40 g/10 min as measured by ASTM D1238 condition g” as set forth in claim 31.

II. Appellant argues that the examiner has erred in rejecting claims 2, 4 and 26-34 under 35 USC 103(a) as being unpatentable over Holden.

From the bottom of page 3 to the end of the first paragraph on page 4 of the brief, appellant argues that Holden dry blends a mixture and as such does not teach, show or suggest melt blending as claimed. Rather, appellant argues, Holden teaches melt processing the dry blend and that it is not appropriate, in this case, for the examiner to take official notice of facts without citing a prior art references. This argument is not persuasive. As an initial matter, the examiner notes that he is not relying upon official notice, but the plain and clear teaching of the Holden reference. The examiner does not dispute that Holden initially dry blends the mixture of resins. However, after dry blending the resins, the resins are “melt blended” by passing them through a screw extruder which is employed to melt and mix the resins (col. 9, lines 58-65). This melting and mixing of the dry blended resins in the screw extruder is "melt blending".

There is nothing in the claims or the instant disclosure to suggest the polymers cannot be "dry blended" prior to being "melt blended". In Holden, the resins are “dry blended”, then they are “melt blended” in an extruder to form the combined composition (col. 9, lines 58-65) and then they are “melt processed” either by an extrusion or injection molding technique (col. 6,

lines 60-col. 7, line 10; col. 8, lines 52-58; Example I and Example II). Further, the instant disclosure makes it clear that the melt blending may take place "using the standard techniques for thermoplastics and no specialized equipment is expected to be required for effective blending. Mixers, extruders or kneaders may be used." (paragraph [0026] of the application published as US 2005/0161858). Accordingly, the examiner submits that the arguments against Holden teaching "melt blending" are not persuasive and that the examiner is in no way relying upon official notice in making the rejection.

At the middle of page 4 of the brief, appellant argues that while Holden broadly teaches general purpose styrene homopolymer having a MFI from 5-25 may be used, all of the examples teach a MFI well below the claimed 20 g/10 min to 40 g/10 min. Accordingly, appellant argues, Holden does not teach, show or suggest the critical claimed feature with sufficient specificity to render the claims obvious. Specifically, appellant argues that Holden does not teach, show or suggest a second polymer exhibiting a MFI from about 20 g/10 min to about 40 g/10 min nor does Holden teach, show or suggest a modified HIPS comprising greater than 50 wt.% HIPS. This argument is not persuasive.

The examiner notes that Holden employs as component (A) a mixture of high impact polystyrene (HIPS) and general purpose styrene homopolymer (GPS). In the rejection GPS is the "second polymer". The component (A) forms from 60-93 wt. % of the entire composition (col. 6, lines 7-11; col. 8, lines 45-49) and the mixture within component (A) is between 45-100% HIPS and 0-55% GPS (col. 6, lines 7-11 and lines 46-50; claim 1 and claim 5). As such, the entire composition disclosed by Holden contains between 27 to 93 wt. % (60% x 45% to 93% x 100%) HIPS and 0 to 51 wt. % GPS (60% x 0% to 93% x 55%). Further, the GPS disclosed as being "suitable" has a MFI of 5-25 g/10 min (as measured by ASTM 1238 condition G; col. 7, line 7 and col. 10, line 44) and a "preferred" range of 10-20 g/10 min (col. 7, lines 1-10). As

such, Holden discloses utilizing “preferred” GPS resins that meet the lower limit of the claimed range of "about 20 g/10 min" and "suitable" GPS resins having a MFI up to 25 g/10 min. Further, Holden discloses that the composition contains between 27 to 93 wt. % HIPS.

The examiner agrees that none of the examples in Holden simultaneously employ both the HIPS at greater than 50 wt. % and the GPS having a MFI within the claimed range (hence the rejection under 35 USC 103(a) instead of 35 USC 102(b)). However, the examiner maintains and submits that Holden discloses an overlapping range with the amount of claimed HIPS and discloses as "preferred" GPS having a MFI as high as 20 g/10 min. Further, Holden et al. teach that the articles made from the compositions within the specified ranges produce satisfactory physical properties (col. 5, lines 46-55) and further suggest that the specific melt flow properties (i.e. melt flow index) of the resin can be selected by the ordinarily skilled artisan in view of the intended application and processing method to be employed (col. 8, line 59-col. 9, line 2).

Therefore the examiner maintains that it would have been *prima facie* obvious to one having ordinary skill in the art at the time of the claimed invention, in view of the individual teachings of Holden et al., to have employed a GPS resin within the “preferred” or “suitable” melt flow index range set forth by Holden et al. (e.g. values up to 20 or 25 g/10 min) while utilizing greater than 50 weight percent HIPS, as also individually set forth by Holden et al., since Holden et al. suggest compositions within the specified ranges produce satisfactory physical properties (col. 5, lines 46-55) and since Holden et al. further suggest that the specific melt flow properties of the resins to be employed can be selected by the ordinarily skilled artisan in view of the intended application and processing method to be employed (col. 8, line 59-col. 9, line 2).

In the last paragraph of page 4 of the brief, appellant argues that components "B" and "C" of Holden are essential components while claim 32 recites that the modified HIPS consists essentially of the HIPS and the second polymer. This argument is not persuasive. As set forth in the rejection, the examiner notes that there is no evidence on the record to suggest that components “B” and “C” of Holden materially affect the basic and novel characteristic of the instantly claimed invention. To the contrary, the examiner submits that the apparent basic and novel characteristic set forth in the original disclosure is the utilization of a "relatively high" MFI second polymer with a “relatively low" MFI HIPS (paragraph [0019] of the published application) and that the instant disclosure does not appear to attempt to exclude the utilization of other resins as long as the relatively high MFI second polymer and relatively low MFI HIPS resins are utilized (paragraph [0036] of the published application). As such, since Holden teaches and suggest utilizing both the relatively high MFI second polymer and the relatively low MFI HIPS, the examiner submits that the rejection is proper.

Additionally, in the last paragraph of page 4 of the brief, appellant argues that the claimed properties of flexural strength and Izod impact set forth in claims 28 and 29 are not recited in Holden. This argument is not persuasive. For the reasons set forth above, the examiner submits that Holden teaches and suggests utilizing the same claimed materials in the same claimed process set forth in claim 31 and that Holden is not limited to the properties set forth in the examples. As such, the examiner submits that the same claimed effects and physical properties (e.g. flexural strength and Izod impact) would be realized by the practice of the method rendered obvious by Holden.

III. Appellant argues that the examiner has erred in rejecting claim 5 under 35 USC 103(a).

Appellant argues that the secondary references do not supply the features missing from Holden. This argument is not persuasive. For the reasons set forth above, the examiner submits that Holden is not deficient as argued.

(11) Related Proceeding(s) Appendix

No decision rendered by a court or the Board is identified by the examiner in the Related Appeals and Interferences section of this examiner's answer.

For the above reasons, it is believed that the rejections should be sustained.

Respectfully submitted,

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